of the spleen are markedly thickened; the interlobular hepatic stroma shows a similar change.

It seems to me that the recognition of cases such as these is of considerable practical importance and that a study of them leads to many interesting questions.

What is their etiology? Are they due to autogenous toxins, to infection, or to an unrecognized lesion of the kidneys? Are the changes in other organs primary or coincident, or may not the kidney lesions themselves be secondary to a morbid condition elsewhere, to an affection of one of the internal secretions or some lack of adjustment in the chemical inter-relations of the body, such as may result from deficiency or excess of known or unknown harmones? Why is the condition so long latent and so sudden in its termination? I put out these questions, not at present to attempt their answer, but to show that here is another field in which every observant practitioner can from time to time contribute material. So far as my own speculations are concerned, it would seem as though an affection equally distributed between two kidneys must have its source in an underlying blood-carried toxin, the point to ascertain being whether this is of a general or local origin, and if the latter, where? I think we can easily understand the cause of the sudden termination, if we look on the functional capacity of the kidney as being greatly in excess of the ordinary demand. With the progressive destruction of the secreting or excreting structures, this reserve is gradually called upon and exhausted, but so long as any excess remains no retention toxemia can occur. Directly that margin is overstepped the blood becomes rapidly surcharged with the products of metabolism, which in their turn act on the kidney protoplasm increasingly depressing its eliminative power and thus by action and reaction leading to a rapidly accelerating abolition of all activity.

Discussion.

Dr. Lartigau: It seems to me that Dr. Power's very interesting paper should not pass without some discussion. Personally I cannot accept in toto the conclusions which Dr. Power has presented here this evening. Furthermore, I cannot see that this type of kidney lesion differs from the ordinary interstitial nephritis so commonly observed in adults. The occurrence of such lesions in the very young does not, it seems to me, justify a separate classification. It seems to me that all the lesions which I saw in the specimens which Dr. Power showed us to-night may be duplicated in any of the fibrotic kidneys seen in older or younger individuals. So far as the clinical picture is concerned, it conforms to that usually found in chronic interstitial nephritis. Certainly a fibrosis of Bowman's capsule is found in fibrotic lesions of the younger subjects and some amount of replacement hyperplasia elsewhere in the kidney. So I must personally dissent from the views expressed by Dr. Power and cannot subscribe to this so-called new type of kidney lesion.

Dr. Spencer: I have been very much entertained by the excellence of the paper read by Dr. Power, but like Dr. Lartigau, I cannot think that the data and the specimens shown represent a new type of pathologic kidney. I can recall having seen many specimens similar in all respects to the specimens which Dr. Power has shown. Clinically I cannot see any great difference between these and the clinical symptoms manifested in chronic intestitial nephritis either in the young adult or in older individuals. I cannot subscribe to this description as representing a new pathologic and clinical entity..

Dr. D'Arcy Power, closing discussion: To begin with I did not discover the Rose-Bradford kidney, nor do I think the criticism very pertinent. The fact that we meet with these cases in young people is well known. I can go back to the literature of 1874 when a kidney lesion of this nature was described in a child seven years of age. The point is that the average kidney disease of the interstitial type is not met with in young people. The fibrotic kidney is very common but has well marked clinical features. Nearly always there are accompanying arterial changes and changes in other organs, and a loss of function of the body at large. That is well known. But here we have a type occurring in young people, which, as Bradford has shown, is not pathologically the same as the granular contracted kidney. There is a difference in the distribution of the lesions, a difference in the cortex. These peculiarities are met with in the young and not in the old. If we met with these kidneys in old people, then there would have been some point to the criticism. When we find one type in young people, ending always in the same way, there is reason to believe that we are dealing with an entity with a different pathology and it is not pertinent to say that because you find these lesions separately in various fibrotic kidneys that therefore there is no such a disease as Rose-Bradford has described.

GERMAN MEASLES.*

By EDWARD GRAY, M. D., Eldridge.

Rubella, rotheln or, in familiar English parlance, German measles, is an exanthematous disease which has received recognition as an independent disorder only within so recent time, and the articles upon it in the various text-books vary so widely in certain particulars that it has seemed desirable to present before you an essay upon this subject which shall have regard to the diagnosis and prognosis in particular.

During the years 1877 to 1887 more than one hundred articles were written upon this disorder. It attracted notice in Germany quite a number of years before it was written upon by British or American practitioners. It is now, at last, generally recognized as not a hybrid of measles and scarlet fever but a disease *sui generis*.

That rubella is a germ-disease is shown by its analogy with all such diseases, its period of invasion, exacerbation and decline; but the cause or *materies morbi*, has not yet been discovered. It is a contagious disorder affecting children chiefly, and these mainly between the ages of three and fifteen years. The oldest of our patients is twenty-two. Sporadic cases are very rare and it occurs in epidemics affecting mainly the families of the better classes and the inmates of institutions, orphan asylums in particular. The proportion of those who are exposed and escape is larger than in the case of scarlatina or measles, so that we may properly infer that the contagion is less active than that of those

* Read before the Sonoma County Medical Society.

diseases. The contagion resides probably in the oral secretions and certainly, judging by our recent experience here, in the desquamated epithelium. The disorder is contagious probably from the first outbreak of the rash until desquamation is nearly complete. It does not protect against either measles or scarlatina nor do they protect against it. It is carried by fomites.

The chief symptoms of rubella are a stage of incubation; a stage of invasion (sometimes absent); a maculo-popular exanthem or rash; fever, generally of mild type; swelling and induration of the post-cervical glands; swelling of the tonsils and sometimes pharyngitis; and desquamation of cuticle.

The period of incubation is somewhat variable, within the figures, usually of eight to sixteen days. You will find recorded in the books other figures as low as four days and as high as twenty-five. Twelve days was the average period here, as nearly as we could determine, as it was that of the first case which presented itself. In no case that I have seen has the stage of incubation been so brief as in scarlet fever.

A stage of invasion is often seen in the severer cases. It may last from three hours to fifteen hours, but is usually brief and in mild cases is often conspicuously absent. A very common history is that the child has gone to bed apparently quite well and wakes in the morning with the rash. Headache, rigors, convulsions and vomiting are all exceptional. Rigors occurred, however, in two of our cases and vomiting in perhaps six, or one-tenth of our cases. At the close of the prodromal stage there occurs one important symptom which persists through the eruptive stage, namely the enlargement of the post-cervical glands. Of this more anon.

We have now reached, chronologically, the great symptom which appeals to the eye, namely the rash. This begins near the borders of the maxilla and spreads rapidly downward over the whole body, reaching the feet in from twelve to twenty hours. It consists of very minute macules or maculo-papules of a pale rose color, with areas of untinged skin between. The more discrete the eruption the more it looks like measles; the more confluent it becomes the more it resembles scarlet fever; but the color never, in my observation, has the vividness belonging to the latter disease. The color is best seen upon the back and the inner surface of the thighs. It is hardly elevated above the surface. The duration of the eruption is from one and a half to three days, two and a half or three being usual time. General erythematous redness of the skin has been noticed. "The eruption may reach its height in one part before appearing in another. This is a point of value in diagnosis and of contrast to scarlatina and measles." A faint staining or pigmentation of the skin remaining for a few days after the rash has disappeared is sometimes observable; rather frequently so to judge by our cases.

The temperature usual and proper to rubella is quite below that of either measles or scarlet fever; in the milder cases, 100° to 101° F.; in the more acute cases higher, the books mentioning 103° as a maximum. The epidemic at this "Home" furnished records running all the way from 99.5° to 109° F. The high temperature last mentioned will be adverted to further on. The pulse and respiration rate accords with the degree of fever.

Next after the eruption the cardinal symptom of rubella is the swelling of the post-cervical and sub-occipital glands. "Probably in no case is it found wanting." Certainly it was present in four-fifths of the cases of our late epidemic. Search from the occiput down to the shoulders and not near the angle of the jaw. This sign may be called well nigh pathognomonic. "In scarlatina, diphtheria and other throat affections, the glands which present enlargement are those at the angle of as well as beneath the lower jaw."

Mild sore throat may be present; it was so in six or eight of our cases, but absent in the large majority of them. Dry cough and bronchitis referred to by Anders have always been conspicuously absent in cases coming under my observation.

Swelling and itching of the skin are usually present, but not often marked.

Leukocytosis is not present in this disease; but I regret to report that we found it impracticable to test this point.

The final symptom is desquamation. Typically it is fine, bran-like or furfuraceous; often scanty in amount, but sometimes moderately copious and in small flakes. The quantity is sometimes so little that the doctor or the family is led to think that there is none; while, on the other hand, it is occasionally abundant enough to shake out a measurable quantity from the sheets every morning. My recent experience leads me to believe that the ordinary practitioner sees but a portion of the period of desquamation. The three earliest cases of this summer were allowed to leave the hospital when apparently the skin was clean, about two weeks after the onset, with the result that they were found to be desquamating freely ten to twenty days thereafter. The desquamation is directly proportional to the intensity of the eruption and prolonged in the ratio of the greater thickness of the cuticle. One patient here with notably thick cuticle took seven or eight weeks to complete the process. In case of doubt put the patient into a bath. As the water begins to dry off the skin, the shedding of the cuticle shows most plainly.

I feel convinced that in private practice it is apt to occur that the patients are allowed to dress early and much of the phenomena of desquamation escapes observation. We certainly received some enlightenment on this point this summer.

Diagnosis. "This," says Holt, "is a matter of extreme difficulty and sometimes even impossible." To this I would add that it can only be impossible as against very mild and irregular scarlet fever, or an atactic case of each disease. As against measles

a diagnosis should be, usually, a matter of no doubt. While the rash of rubella often strikingly resembles that of measles, it is lighter in color and devoid of crescentic grouping. But beyond this and much more important is the difference in the prodromata; the abrupt onset of rubella without catarrhal symptoms, and the three days of the latter in measles with such symptoms. Also the presence of bronchitis and broncho-pneumonia in measles and their absence in rubella. Typical cases of scarlet fever and rubella are readily distinguished; for the former is a more intense disease in every way; in the color of the rash, in the bright blush leaving no visible sound skin in the affected area; in the vomiting, the pronounced sore throat; and the strawberry tongue; in the longer duration of the eruption and the much higher degree of the fever; in the complications; and in the lamellar character of the desquamation and large size of the flakes. Doubt and difficulty are bound to arise, however, in attempting to discriminate between certain very mild cases of scarlet fever and rubella. The eruption may be scanty and the constitutional signs so little marked as to afford no sure way of decision. It is just here that the position of the swollen glands becomes of so much importance. Scarlet fever involves the tonsils very commonly; if now the swollen glands lie at the angle of the jaw or under the tongue, the malady is doubtless scarlatina and you should be on your guard against a post-scarlatinal nephritis (particularly in these mild cases); if, on the other hand, the glands involved all lie back of the sterno-mastoid then the disease is rubella. I am stating this principle as shown to me by experience and not as recorded in the formal text-books. There is one other important difference between rubella and scarlatina residing in the difference of the time of incubation; the average for rubella is two to three times as long as for scarlet fever. By contrasting a very short period for rubella and a very long one for scarlet fever one might obtain an incubation of almost equal length; but it is clear that such is not a lawful way to do.

One other principle seems to me worthy of recalling to mind; namely, that in a considerable epidemic there will be some cases at least to conform to the average type. Now no one of the cases in our recent epidemic was typical of scarlet fever, while a number tallied admirably with rubella. I beg you to bear this in mind when the mortality shall come to be recorded.

It is quite possible that a few cases of rubella showing the mildest symptoms and a temperature of little over 99° F. (especially if not taken by rectum), and a scanty exanthem may be mistaken for a heat rash, a lichen or some other skin lesion. Only the occurrence of the subsequent desquamation can show the diagnosis here. One case in our series escaped notice during the eruptive stage, but was detected in desquamation.

As to prognosis you will find the books in some confusion, if not contradiction. Holt says: "There are few diseases so free from danger as rubella. Complications and sequelæ are very seldom seen and when present are usually of the mildest character." Note the word "usually." Most other writers call the prognosis invariably good. Anders, however, is more guarded, adding these restrictions: "but when the surroundings are unhygienic, or in cases in which the child has been delicate previously, it is more serious. Complications, especially pneumonia or diphtheria, may prove fatal, and in some cases the mortality reported has been as high as 9 per cent." Note the wide variation between "invariably good" and 9 per cent. The latter figure is certainly high. In our recent experience the mortality was 5 per cent, or three cases. Two were boys and one a girl; all died of acute or ulcerative endocarditis after a period of illness of seven days, two and a half, and one day, respectively. The maximum temperature of these three cases was 109.2°, 106° and 109.6°. A fourth death did occur from abscess of the lung, but as this was in the person of a child known to have chronic bronchitis and weak lungs and occurred fifteen days after the onset of rubella, which was of mild type, it seems only fair to impute this to the known state of the lungs and not to the rubella. But, if counted, it makes the rate of mortality 6 2-3 per cent.

Here, then, as in so many other like cases, the prognosis is better in private practice than among institutions and hospitals.

Among our cases there was one relapse, a recrudescence of the rash and fever before the desquamation was nearly completed. I have been unable to find any reference to the possibility of such an occurrence in the seven formal works of reference available to me. The patient referred to recovered without an untoward symptom.

The only sequela in this series of cases was of acute nephritis occurring in the third week and recovering promptly in the course of eight to ten days.

Otitis, conjunctivitis or keratitis, amygdalitis, pleuritis, pneumonitis did not appear.

Treatment. There is no treatment for rubella as such. The mild cases require nothing but confinement to bed, restriction of the diet and careful watching.

More severe cases must be treated symptomatically as the indications arise. Sponging, tepid baths; sometimes such heart tonics as strychnia, spartein sulphate, digitalin, aromatic ammonia, may be called for. Disinfection of the person and his clothing and bedding, especially near the close of the stage of desquamation, is decidedly indicated. In short, the regime required for stamping out any contagious disease should be put into force and maintained. We adopted caps and gowns for the visiting physicians and the nurses and a disinfecting spray for the shoes, and rigid disinfection of the underwear of the patients.

This paper will not have been in vain if you shall think somewhat more seriously of rubella than heretofore.